IMPROVEMENTS FOR SEMICONDUCTOR INTERFACES

ABSTRACT

The present invention relates generally to compositions and methods of improving the interface between a semiconductor material and a dielectric. One method provides for a method of improving the interface between a dielectric and a semiconductor material comprising the steps of preparing a passivated semiconductor surface using a valence-mending agent, depositing a precursor to a dielectric on the valence-mended semiconductor surface and oxidizing the precursor to a dielectric, wherein depositing and oxidizing do not damage the valence-mended semiconductor surface. The present invention also includes a semiconductor/dielectric interface with improved capacitance-voltage characteristics comprising a semiconductor substrate having at least one surface with one atomic layer of valence-mending atoms and a dielectric deposited on the semiconductor substrate.